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ABSTRACT

This is a course in which the student will receive the general information, technical knowledge, basic skills, attitudes, and values required for job entry level as an auto body repair helper. Course content includes general and specific goals, orientation, instruction in service tools and bench skills, and auto mechanics as applied to auto body. A bibliography and post-test are appended. (NH)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM



DADE COUNTY PUBLIC SCHOOLS

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Course Outline
AUTO BODY REPAIR AND REFINISHING 3
(Automotive Mechanics as Applied to Auto Body)
Department 48 - Course 9037.02

DIVISION OF INSTRUCTION • 1973

D A D E C O U N T Y P U B L I C S C H O O L S

1450 NORTHEAST SECOND AVENUE

MIAMI, FLORIDA 33132

Course Outline

AUTO BODY REPAIR AND REFINISHING 3
(Automotive Mechanics as applied to Auto Body)

Department 58 - Course 9037.02

county office of

VOCATIONAL AND ADULT EDUCATION

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Dade County Public Schools
Miami, Florida 33132

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Course Description

<u>9037</u>	<u>48</u>	<u>9037.02</u>	<u>AUTOMOTIVE MECHANICS AS</u>
<u>State Category</u>	<u>County Dept.</u>	<u>County Course</u>	<u>APPLIED TO AUTO BODY</u>
Number	Number	Number	Course Title

This quinmester course is designed as one of a group of quinmester courses offered in the field of auto body repairs. The student will receive the general information, technical knowledge, basic skills, attitudes and values that are required for job entry level as auto body repair helper. This course will be given in a 9-week period.

Indicators of success: The applicant must demonstrate an eighth grade equivalency score in reading and math. Also have average ability in mechanical aptitudes.

Clock Hours: 135

PREFACE

The following quinmester course outline is a guide to help students become employable with skills, knowledge attitudes and values necessary for performing the required service of the automotive mechanics as applied to auto body.

This course is designed as a foundation quinmester course for the auto body repairman. This outline consists of four blocks of instruction which are subdivided into several units each. It is only one part of a series of quinmester outlines designed for the complete auto body repairman. This course is 135 hours in length.

Prerequisites for this course is as follows: The student should have an eighth grade equivalency score in reading, comprehension, arithmetic fundamentals and mechanical aptitude. The student must be physically and mentally able to profit from this training.

Prior to entry into this course, the vocational student will display mastery of the skills indicated in Unibody Construction and Frame Alignment (9037.01).

Instruction will consist of demonstrations, lectures, group discussions audio visual aids and resource people from industry. Instruction will be flexible to meet individual needs and abilities.

The bibliography appearing on the last page of this outline lists several basic references, also supplementary references and audio visual aids.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee, and the Vocational Curriculum Materials Service and has been approved by the Dade County Vocational Curriculum Committee.

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with Suggested Hourly Breakdown

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BLOCK

I. ORIENTATION (5 Hours)	
Objectives of Course	1
Student Benefits	1
Student Responsibilities	1
II. SERVICE TOOLS AND BENCH SKILLS (20 Hours)	
Automotive Hand Tools	1
Measuring Devices and Their Use	2
III. AUTO MECHANICS AS APPLIED TO AUTO BODY (110 Hours)	
The Automotive Engine Assembly	2
The Automotive Cooling System	2
The Automotive Electrical System	2
The Automotive Front Suspension	3
The Automotive Air Condition	3
IV. QUINMESTER POST-TEST	

APPENDIX: QUINMESTER POST-TEST SAMPLE

GOALS

The Auto Body Repair trainee must be able to demonstrate:

1. The ability to identify, diagnose and perform minor repairs to the automotive engine and related components.
2. The ability to identify, diagnose and perform minor repairs to the automotive cooling system.
3. The ability to identify, diagnose and perform minor repairs to the automotive electrical system.
4. The ability to identify, diagnose and perform minor repairs to the automotive front suspension.
5. The ability to identify, diagnose and perform minor repairs to the automotive air condition.
6. Pride and respect of craftsmanship for this occupational field.
7. Safe work habits and proper shop behavior to guard against accidents.
8. Positive attitudes regarding the value and dignity of work.
9. An incentive to continue with more advanced training within this occupational field.

SPECIFIC BLOCK OBJECTIVES

BLOCK I - ORIENTATION

The student must be able to:

1. List the opportunities that are available for career in auto body occupation by written assignment.
2. State what will be expected of him in auto mechanics as applied to auto body repairs, oral or written.
3. Exhibit pride and respect for craftsmanship by his actions in shop or laboratory.
4. Demonstrate skills and knowledge which will prepare him for safe working life by performing shop assignments.
5. Demonstrate understanding and acceptance of his duties and responsibilities by his performance in shop or laboratory.
6. Demonstrate an understanding of shop organization, safety rules and regulations by observance and performance.

BLOCK II - SERVICE TOOLS AND BENCH SKILLS

The student must be able to:

1. Define the general type of tools and use by selection and identification test.
2. Exhibit the ability to practice safety precautions in the use of tools and equipment by observance and practice of shop rules and regulations.
3. Exhibit the ability to use the applicable tools and bench skills by selection and use.
4. Demonstrate proper care and maintenance of tools and equipment by study and observance of written instructions.

BLOCK III - AUTO MECHANICS AS APPLIED TO AUTO BODY

The student must be able to:

1. Exhibit the ability to identify types of engines and components by study of text and motor manuals.
2. Diagnose minor damage to automotive engine by visual inspection and testing methods.
3. Exhibit the ability to perform minor repairs by shop performance and instructions.
4. Demonstrate the ability to identify types of cooling systems and components by study of text and service manuals.
5. Diagnose collision damage to cooling system by visual inspection.
6. Exhibit the ability to perform minor repairs by following oral and written instruction.
7. Demonstrate the ability to identify components of the electrical system by written test.
8. Diagnose collision damage by visual inspection and testing methods.

9. Exhibit the ability to perform minor repairs by actual shop practice.
10. Demonstrate the ability to identify components of the automotive front suspension by studying charts and service manuals.
11. Diagnose collision damage by visual inspection, testing equipment and charts.
12. Demonstrate the ability to perform minor repairs by using equipment and tools.
13. Demonstrate the ability to identify types of automotive air condition and components by study of texts and service manuals.
14. Diagnose collision damage by visual inspection and testing equipment.
15. Exhibit the ability to perform minor repairs by using tools, material and equipment.

BLOCK IV - QUINMESTER POST TEST

The student must be able to:

Satisfactorily complete the quinmester post test.

Course Outline

AUTO BODY REPAIR AND REFINISHING 3 (Automotive Mechanics as Applied to Auto Body)

Department 48 - Course 9037.02

I. ORIENTATION

- A. Objectives of Course
 - 1. Standards
 - 2. Methods of evaluation
 - a. Oral test
 - b. Written test
 - c. Manipulation
 - d. Diagnosis and job performance
 - 3. Teaching methods
- B. Student Benefits
 - 1. Opportunities for employment
 - a. Job opportunities
 - b. Scope of trade
 - 2. Qualification for employment
 - a. Job competency
 - b. Attitude
 - c. Dependability
 - d. Pride of workmanship
 - e. Experience
 - f. Trade certificate
 - g. Foundation for more education and training
- C. Student Responsibilities
 - 1. Safety regulations
 - 2. School policies and expenses
 - 3. Shop rules and procedures
 - a. Use and care of equipment
 - b. Care of hand tools
 - c. Appropriate dress
 - d. Reporting loss of equipment
 - e. Reporting defective equipment
 - f. Housekeeping
 - g. Materials and supplies
 - h. Employee-employer relations
 - i. Employee-customer relations

II. SERVICE TOOLS AND BENCH SKILLS

- A. Automotive Hand Tools
 - 1. Types and sizes
 - 2. Uses and safety precautions
 - a. Drilling and reaming
 - b. Taps and dies
 - c. Tube flaring tools
 - d. Power tools

II. SERVICE TOOLS AND BENCH SKILLS

- e. Arbor presses
- f. Soldering tools
- g. Vises and clamps
- h. Lifting devices
- i. Wrenches
- j. Reamer
- k. Hack saws
- l. Hone

B. Measuring Devices and Their Use

- 1. Micrometers
- 2. Dial indicators
- 3. Pressure gauges

III. AUTO MECHANICS AS APPLIED TO AUTO BODY

A. The Automotive Engine Assembly

- 1. Identification
- 2. Types and sizes
- 3. Inspection and minor collision repairs
 - a. Engine block
 - b. Cylinder head
 - c. Valve cover
 - d. Oil pan
 - e. Manifold
 - f. Motor mounts
 - g. Spark plugs
 - h. Wiring
 - i. Fuel pump
 - j. Starter
 - k. Distributor
 - l. Generator or alternator
 - m. Carburetor

B. The Automotive Cooling System

- 1. Identification
- 2. Types
- 3. Inspection and minor collision repairs
 - a. Radiator
 - b. Water pump
 - c. Fan blade
 - d. Fan belt
 - e. Thermostat
 - f. Oil cooler
 - g. Air

C. The Automotive Electrical System

- 1. Identification
- 2. Types

III. AUTO MECHANICS AS APPLIED TO AUTO BODY (Contd.)

3. Inspection and minor collision repairs
 - a. Battery
 - b. Headlights
 - c. Signal horn
 - d. Park lights
 - e. Signal lights
 - f. Wiring
 - g. Voltage regulator
 - h. Switches
- D. The Automotive Front Suspension
 1. Identification
 2. Types
 3. Inspection and minor collision repairs
 - a. Front wheels
 - b. Lower control arms
 - c. Upper control arms
 - d. Ball joint
 - e. Spindle
 - f. Knuckle
 - g. Steering arms
 - h. Tie rods
 - i. Brake drum
 - j. Wheel balance
- E. The Automotive Air Condition
 1. Identification
 2. Types
 3. Inspection and minor collision repair
 - a. Condenser
 - b. Compressor
 - c. Receiver
 - d. Expansion valve
 - e. Evaporator
 - f. Belts
 - g. Pulleys

IV. QUINMESTER POST TEST

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- | | <u>Date Co.
Number</u> |
|---|----------------------------|
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| 2. <u>ABC of Hand Tools.</u> Part II, 16mm, 16 min, color, sound, General Motors. | 1-11399 |
| 3. <u>Accidents Happen to Sam,</u> 16mm, 13 min, B/W, Sound, National Safety. | 1-11339 |
| 4. <u>I Want a Job,</u> 16mm, 26 min, B/W, Sound, Ford Motor Co. | 1-11568 |

APPENDIX

QUINMESTER POST-TEST SAMPLE

Quinmester Post Test

Name _____ Date _____ Score _____

The following items are multiple choice. Select the one you believe correct. Circle the number provided at left of item.

1. When drilling steel 1/8 inch or more in thickness, which of the following lubricants should be used:
 1. Mineral spirits
 2. Oil
 3. Water
 4. Wheel bearing grease
2. Tube flaring tools are used to:
 1. Enlarge tubing
 2. Flare tubing for union connections
 3. Stretch exhaust pipe connections
 4. Ignite warning flares
3. A tap is used to:
 1. Make threads in hole
 2. Screw on bolt
 3. Cut threads on rod or pipe
 4. None of above
4. A vise is used to:
 1. Squeeze
 2. Hold
 3. Press
 4. All of above
5. The type socket used on a square nut is:
 1. 6 point
 2. 12 point
 3. 8 point
 4. All of above
6. An impact wrench is used to:
 1. Drill
 2. Ream
 3. Remove or replace bolts
 4. All of above

7. A die is used to:
 1. Ream
 2. Cut threads on rod or pipe
 3. Cut threads in hole
 4. Drill
8. Hack saws are used to:
 1. Cut fiber glass
 2. Cut rod or bolt
 3. Cut sheet metal
 4. All of above
9. A timing light is used to:
 1. Check compression
 2. Check timing
 3. Check oil pressure
 4. Check manifold pressure
10. The result of incorrect timing will cause:
 1. Loss of power
 2. Spark knock
 3. Rough idling
 4. All of above
11. Feeler gauges are used to:
 1. Adjust carburetor
 2. Set timing
 3. Set spark plug tap
 4. None of above
12. High compression motors require:
 1. Low octane gas
 2. High octaine gas
 3. Octane immaterial
 4. Diesel fuel
13. Broken motor mounts will cause:
 1. Motor to shift forward into radiator
 2. Disruption of gear shift linkage
 3. Motor to shift backward
 4. All of above
14. The cooling system consists of the following components:
 1. Radiator
 2. Water pump
 3. Fan blade
 4. All of above

15. Transmission oil cooling lines function by:

1. Oil flowing through cooler
2. Oil mixed with water
3. Oil cooled by fan
4. None of above

16. Damaged radiators, depending on extent of damage are either:

1. Recored
2. Replaced
3. Repaired
4. All of above

The following sentences need a word or phrase to complete. Fill in the blank spaces with correct word or phrases.

17. The older model automobiles were equipped with a six volt system. The current model automobiles are equipped with _____ system.
18. Current model automobiles are equipped with alternators. Prior to this they were equipped with _____.
19. Most all passenger vehicles are equipped with coil spring front suspension. Prior to this _____ were used.
20. For years manufacturers have used hydraulic brake shoe system, but recently _____ have been used extensively.
21. Some wheel balancing machines are designed to balance wheels on the automobile; others require wheels be _____.
22. In order to balance wheels _____ are placed as need on rim of wheels.
23. It is impossible to align front wheels if a wheel is _____.
24. The three major front suspension settings are _____, _____, and _____.
25. Incorrect front end alignment will cause tire to _____ and hard _____.
26. Before checking front end alignment, three important preliminary checks must be made. 1. _____ 2. _____ 3. _____.
27. The first automobile manufacturer to install air condition was _____.
28. In 1962 the percentage of automobile passenger cars equipped with factory air condition was _____%.

29. A gas leak can be detected by the use of _____.
30. When recharging air conditions some require the use of _____ gauges, some require _____ gauges.

Answer Key to Quinmester Post Test

- | | |
|------------------------------|--|
| 1. 2 | 26. Tire inflation - wheel bearings - steering linkage |
| 2. 2 | |
| 3. 1 | 27. Packard Motor Company |
| 4. 4 | 28. 11.31% |
| 5. 3 | 29. Halide gas torch |
| 6. 3 | 30. Two - three |
| 7. 2 | |
| 8. 4 | |
| 9. 2 | |
| 10. 4 | |
| 11. 3 | |
| 12. 2 | |
| 13. 4 | |
| 14. 4 | |
| 15. 1 | |
| 16. 4 | |
| 17. Twelve volt | |
| 18. Generator | |
| 19. Leaf springs | |
| 20. Disc brakes | |
| 21. Removed | |
| 22. Weights | |
| 23. Bent | |
| 24. Caster - camber - toe-in | |
| 25. Wear - steering | |